

In re Appln of Takashi TANIOKA et al
Appln. No.10/585,878
Reply to Office Action of August 19, 2010
Reply dated October 19, 2010

REMARKS

The Final Office Action of August 19, 2010, and the prior art relied upon therein have been carefully reviewed. Claims 1-24, 29 and 30 presently appear in this application and define patentable subject matter warranting their allowance. Favorable reconsideration and allowance are earnestly solicited.

Withdrawn claims 25-28 have been cancelled without prejudice to refiling in a divisional application.

Claims 1-12, 14-19, and 29-30 have been rejected under 35 USC §103(a) as being unpatentable over Smith et al (US2004/0109817); and

Claims 13, and 20-24 have been rejected under 35 USC §103(a) as being unpatentable over Smith et al in view of Laxman et al.

Both of these rejections are traversed and are addressed together below.

The examiner takes the position that:

Smith et al does not explicitly teach that the fluoro compound is converted to fluorine gas at atmospheric pressure or over atmospheric pressure. However, Smith et al uses a pressure gradient across a membrane in order to convert the atomic fluorine to molecular fluorine (paragraphs 0035, 0037-0038). As the output of the membrane has a lower pressure in these sections, it would be obvious to modify the pressure on the input side of the membrane to be greater in order to make optimize the effectiveness of the gradient.

Meanwhile, paragraph [0037] of Smith referred to by the examiner, discloses as follows:

Atomic fluorine dissociated by the plasma in the plasma generator 230 recombines into molecular fluorine before reaching the membrane separation device 280. Accordingly, the membrane separation device 280 serves to separate

molecular fluorine from the reaction products. (emphasis added)

This paragraph [0037] clearly teaches to one of ordinary skill in the art that in the invention of Smith, the conversion of the fluoro compound into F₂ is conducted before reaching the membrane separation device. According to the disclosure of Smith, without the conversion that occurs before reaching the membrane separation device, the membrane separation device cannot serve the advantage of the invention of Smith separating molecular fluorine from the reaction products. Therefore, one of ordinary skill in the art would not consider this Smith reference without considering the conversion before reaching the membrane separation device, which is the key technical matter disclosed in Smith.

The examiner's position that "Smith et al uses a pressure gradient across a membrane in order to convert the atomic fluorine to molecular fluorine (paragraphs 0035, 0037-0038)" (emphasis added) is completely wrong since this conversion is conducted before reaching the membrane separation device in the invention of Smith.

Paragraph [0013] of Smith teaches that:

The pressure control mechanism maintains a partial pressure of the feed stock on the inlet side of the solid electrolyte higher than the partial pressure of fluorine on the outlet side.

In addition, paragraph [0013] of Smith further teaches that, since the pressure at the inlet of the fluorine separator is higher than that at the outlet, the reaction product gas can be forced to be entered into the fluorine separator, but only F₂ gas in the reaction product can pass through the separator. If the pressure at the outlet

of the fluorine separator is higher than that at the inlet, this function of the separator cannot be available.

By contrast, in the presently claimed invention, it is necessary to conduct a step of exciting at least one fluoro compound in a fluoro compound-containing gas by conferring energy on the fluoro compound-containing gas under reduced pressure; and then conduct a step of partially or completely converting the excited fluoro compound-containing gas containing the excited fluoro compound into F₂ under atmospheric pressure or a pressure that is over atmospheric pressure. If the conversion is conducted in the separator in accordance with the present invention, those of skill in the art would have to adjust a pressure of the separator so that the pressure at the outlet side (i.e., atmospheric pressure or more) is higher than that at the inlet side (i.e., reduced pressure). The technical concept of the Smith's invention is thus quite different from the presently claimed invention. Accordingly, the examiner's position that "As the output of the membrane has a lower pressure in these sections, it would be obvious to modify the pressure on the input side of the membrane to be greater in order to make optimize the effectiveness of the gradient." is clearly in error. This is supported by paragraph [0029] of Smith, which discloses:

In FIG.1, the fluorine separator 160 is a condenser that cools and condenses at least some of the reaction products. ...

According to common technical knowledge in the art, a condenser is controlled under a condition where its temperature is decreased while its pressure is unchanged (the term "condensation" means an operation where temperature is decreased while pressure is unchanged).

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Smith does not teach, in light of common technical knowledge in the art, that the separator should be controlled under a condition in which its pressure is changed. Thus, the examiner's reading of the applied Smith reference is clearly wrong. The applied secondary Laxman reference does not fulfill the deficiencies of Smith as discussed above and accordingly, Smith, either alone or in combination with Laxman, cannot make obvious the presently claimed invention.

Reconsideration and withdrawal of both the obviousness rejections are therefore respectfully requested.

In view of the above, the claims comply with 35 USC §112 and define patentable subject matter warranting their allowance. Favorable consideration and early allowance are earnestly urged.

If the Examiner has any questions or suggestions, she is respectfully invited and requested to contact the undersigned at (202) 628-5197.

Respectfully submitted,
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